*भारतीय मानक*

**IS 18387 : 2023**

***Indian Standard***

# जिप्सम सीलिंग टाइलें — विशिष्टि

# Gypsum Ceiling Tiles — Specification

ICS 91.100.10

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**September 2023** **Price Group 7**

Building Lime and Gypsum Products Sectional Committee, CED 04

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Building Lime and Gypsum Products Sectional Committee had been approved by the Civil Engineering Division Council.

The internal surfaces of the ceilings of most of the buildings are finished internally by applying plaster in one or more coats. But nowadays, to fulfil the various functional requirements such as electric wires, signal cables, pipes, air-conditioning ducts, etc, the trend of providing false ceilings is increasing steadily. A well-planned false ceiling provides both functional and aesthetic features that can enhance the working environment manifold. Gypsum ceiling tiles are a popular alternative for false ceilings because of their excellent thermal and sound insulation property. Gypsum ceiling tiles have a special advantage over other available ceiling tiles materials in that they are light in weight.

Sufficient quantities of natural gypsum and by-product gypsum are available in India. Though this gypsum has been mostly used in the manufacture of gypsum ceiling tiles after suitable treatment, if required, is also equally suitable for manufacturing such ceiling boards.

Large number of gypsum ceiling tiles are being manufactured and used in the country. This standard is being formulated to provide necessary guidance for the manufacturers and users of paper coated gypsum ceiling tiles. Gypsum ceiling tiles may be manufactured as plain, painted, laminated, semi-perforated or perforated.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

This standard contributes to the United Nations Sustainable Development Goals: Goal 9 ‘Industry, Innovation and Infrastructure’ towards building resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded-off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# GYPSUM CEILING TILES — SPECIFICATION

## 1 SCOPE

**1.1** This standard covers classification, dimensions, manufacturing, physical requirement, sampling and criteria of conformity for gypsum ceiling tiles.

**1.2** This standard does not cover requirements for reinforced gypsum plasterboards and tiles, and the same is covered in IS 2095 (Part 3).

## 2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

## 3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2469 and the following shall apply.

**3.1 Back** — surface intended to be concealed

**3.2 Ceiling Substructure** — suspended frame, which supports the gypsum ceiling element.

**3.3 Face** — surface intended to be exposed

**3.4 Grid** — metal or any other suitable materials, profile sections, assembled in geometric formations to provide support to gypsum ceilings tiles.

**3.5 Gypsum Ceiling Tiles** — a composition of gypsum plaster and paper forming body of regular dimensions. It may contain additives and special surface coating or lamination.

**3.6 Perforations** — holes of constant or varying shape and size

**3.7 Suspended Ceiling or False Ceiling** — sub-structural building elements are fixed and installed under load-bearing components of a building or structure with the objective to provide final characteristics and performance.

**3.8 Thin Laminations** — material applied to one or more surfaces to impart decoration or functional properties.

## 4 MANUFACTURING

**4.1** Gypsum plaster is the major raw material used for the manufacturing of gypsum ceiling tiles. The tiles are encased with paper liners on both sides. These ceiling tiles are manufactured with plain, patterned or textured surfaces. These gypsum ceiling tiles may also be manufactured from gypsum plasterboard confirming to IS 2095 (Parts 1 and Part 2). To improve sound absorption properties, these tiles are also produced with perforation. Grids (metallic or any other material) are used to install gypsum ceiling tiles, these grids are fixed to the ceiling substructure.

**4.2** The shape and size of the gypsum ceiling tiles depend on the grid size (*see* Fig. 1). The most commonly used size of gypsum ceiling tiles as per their grid size is as given in Table 1. Generally, the thickness of gypsum ceiling tiles varies from 6 mm to 15 mm. Gypsum ceiling tiles with sizes and thicknesses other than those given in Table 1 may also be manufactured as per the agreement between the purchaser and the manufacturer. However, the tolerance given in **7.1** shall be applicable to all sizes.

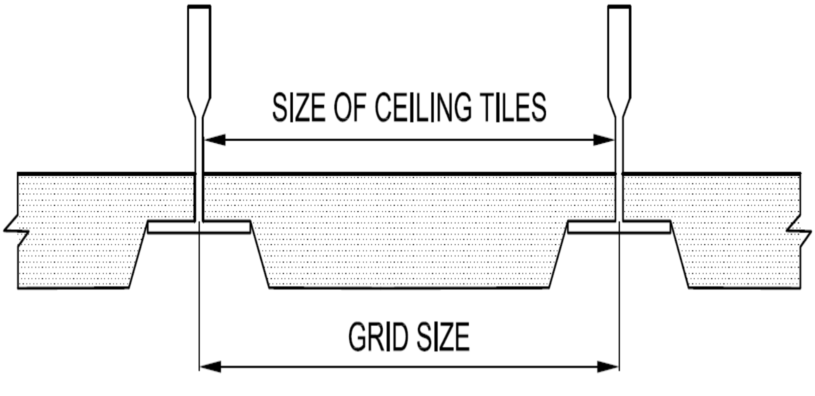


FIG. 1 TYPICAL ARRANGEMENT OF GYPSUM CEILINGS TILES WITH GRID SIZE

### 4.3 Edge Profiles of Gypsum Ceiling Tiles

The gypsum ceiling tiles are manufactured with an edge profile, as given in Table 2.

## 5 TYPES OF GYPSUM CEILING TILES

Gypsum ceiling tiles are classified as given in Table 3.

## 6 MATERIALS

### 6.1 Gypsum Plaster

Gypsum (natural gypsum or by-product gypsum) is used for making gypsum plaster. Gypsum plaster used for the manufacturing of gypsum ceiling tiles shall comply with the requirements given in Table 4. If by-product gypsum is used for making gypsum plaster, it shall comply with IS 12679.

### 6.2 Additives

Suitable additives like glass fibres, silicon oil and other ingredients may be added as appropriate to achieve the specific performance/quality requirement of the end product.

### 6.3 Paper Liner

Strong, durable paper liners shall be used on both sides for lining purposes.

### 6.4 Acrylic Paint

The acrylic paint used for the painting of gypsum ceiling tiles shall be conforming to IS 15489.

### 6.5 Metalized Polyester Laminate (MPL)

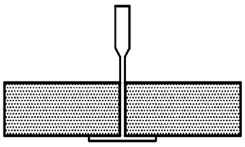
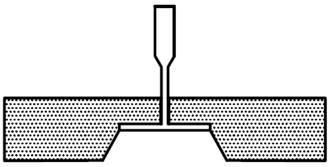
**Table 1 Dimensions of Gypsum Ceiling Tiles with Grids**

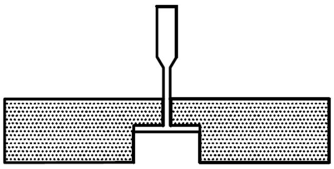
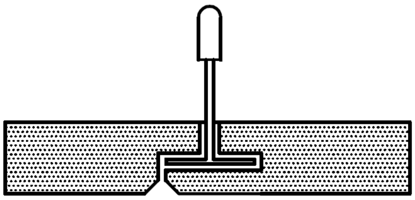
(*Clause* 4.2)

| Sl No.<br>(1) | Gypsum Ceiling Tiles Size mm<br>(2) | Grid Size mm<br>(3) | Gypsum Ceiling Tiles Thickness mm<br>(4) |
|---|---|---|---|
| i) | 295 × 295 | 300 × 300 | 6/8 |
| ii) | 295 × 595 | 300 × 600 | 6/8 |
| iii) | 595 × 595 | 600 × 600 | 8/9.5/12.5 |
| iv) | 595 × 1 195 | 600 × 1 200 | 12.5 |
| v) | 1 195 × 1 195 | 1 200 × 1 200 | 12.5/15 |

**Table 2 Edge Profiles of Gypsum Ceiling Tiles**

(*Clause* 4.3)

| Sl No.<br>(1) | Edge Profiles Name<br>(2) | Illustration of Edge Profiles<br>(3) |
|---|---|---|
| i) | Square edge (SE) |  |
| ii) | Revealed edge (RE) |  |

| Sl No. | Edge Profiles Name | Illustration of Edge Profiles |
|---|---|---|
| (1) | (2) | (3) |
| iii) | Narrow revealed edge (NRE) |  |
| iv) | Concealed edge (D2H) |  |

### Table 3 Classification of Gypsum Ceiling Tiles

(*Clause* 5)

| Sl No. | Types | Description | Remark |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| i) | Type 1 | Both sides are unpainted | — |
| ii) | Type 2 | Face side painted with acrylic paint and back side painted or metalized polyester laminate (MPL) | — |
| iii) | Type 3 | Face side laminated with wood veneers, plastic films, etc | — |
| iv) | Type 4 | Face side laminated with wood veneers, plastic films etc. and backside with metalized polyester laminate (MPL) | For specific thermal resistance and protection from moisture and water dripping are required. |
| v) | Type 5 | With semi-perforation, it can be supplied with or without face side painted with acrylic paint | — |
| vi) | Type 6 | Fully perforated and backed with sound absorbent tissue | For enhancing sound absorption properties. |

**Table 4 Requirements of Gypsum**

(*Clause* 6.1)

| Sl No. | Characteristics | Requirement | Method of Test, Ref to |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| i) | $CaSO_4.2H_2O$, percent, *Min* | 70 | IS 1288 |
| ii) | Free water, percent, *Max* | | |
| | a) Natural (mineral) gypsum | 5 | IS 1288 |
| | b) By-product gypsum | 13 | |
| iii) | *p*H | | |
| | a) Natural (mineral) gypsum | 6 to 8 | IS 2720 (Part 26) |
| | b) By-product gypsum | 5 to 9 | |
| iv) | $SiO_2$, percent, *Max* | 8 | IS 1288 |
| v) | Chloride content, ppm, *Max* | 500 | IS 8272 |

NOTE — In place of above methods, use of XRF may the resorted. However, in case of any conflict, the above methods shall be treated as referee methods.

## 7 REQUIREMENTS

Table 5 provides the details of mandatory and optional test requirements for gypsum ceiling tiles. On the demand of purchaser, gypsum ceiling tiles shall also comply with the optional requirements.

### 7.1 Dimensions and Tolerances

**7.1.1** *Dimensions and Tolerances on Size*

The tolerance on the size of the gypsum ceiling tiles shall be ± 2.0 mm and tolerance on thickness shall be ± 0.5 mm.

**7.1.2** *Dimensions and Tolerances on Edges Profiles*

The minimum profile thickness at the edge of the profiles shall not be less than 6 mm. The minimum profile length of the edge shall not be less than as given in Fig 2.

### 7.2 Tolerance on Shape

**7.2.1** *Tolerance on Straightness of Edges*

The tolerance of straightness of edges shall be 2 mm per metre length when tested as per IS 2095 (Part 1).

**7.2.2** *Tolerance on Squareness of Edges*

The tolerance of squareness of edges shall be 2 mm per metre length when tested as per IS 2095 (Part 1).

### 7.3 Density

The gypsum ceiling tiles, when tested for density as per IS 2095 (Part 1). It shall be in the range of 500 kg/m$^3$ to 950 kg/m$^3$.

### 7.4 Flexural Breaking Strength

The minimum flexural breaking load of gypsum ceiling tiles shall be as per Table 6 when tested as per IS 2095 (Part 1). For thicknesses other than those given in Table 6, the minimum flexural breaking load of gypsum ceiling tiles (in N) shall be 14.4 times of thickness.

Fully length sample shall be taken for the flexural breaking load test. The spacing of supports shall be the length or width of the tile minus two times of profile length minus 10 mm.

### 7.5 Water Absorption

The gypsum ceiling tiles, when tested for water absorption as per IS 2095 (Part 1), shall not be more than 8 percent.

### 7.6 Sound Absorption

The minimum Noise Reduction Coefficient (NRC) value for Type 5 and Type 6 gypsum ceiling tiles shall be 0.70, when tested according to IS 8225.

NOTE — For detail guidelines, special literature may be referred such as ASTM C 423.

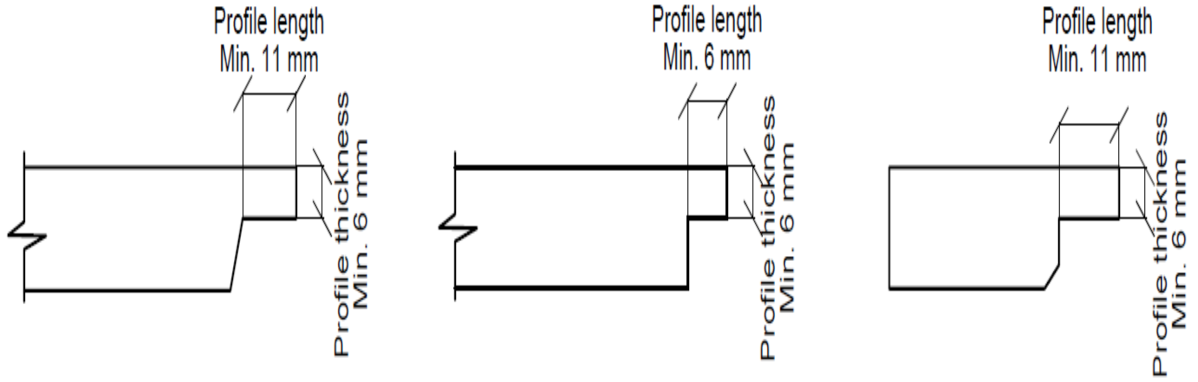
### 7.7 Thermal Conductivity

The thermal conductivity of all gypsum ceiling tiles shall be in the range of 0.16 w/mk to 0.24 w/mk when tested according to IS 3346.

**Table 5 Mandatory and Optional Test Requirements for Gypsum Ceiling Tiles**

(*Clause* 7)

| Sl No.<br>(1) | Parameter<br>(2) | Mandatory<br>(3) | Optional<br>(4) |
|---|---|---|---|
| i) | Dimensions and tolerances | Type 1 to 6 | — |
| ii) | Tolerance on shape | Type 1 to 6 | — |
| iii) | Density | Type 1 to 6 | — |
| iv) | Flexural breaking strength | Type 1 to 6 | — |
| v) | Water absorption | Type 1 to 6 | — |
| vi) | Sound transmission | Type 5 and 6 | Type 1 to 4 |
| vii) | Thermal conductivity | Type 4 | Types 1, 2, 3, 5 and 6 |
| viii) | Fire resistance | — | Type 1 to 6 |
| ix) | Sag | — | Type 1 to 6 |
| x) | Finish | Type 1 to 6 | — |



REVEAL EDGE NARROW REVEAL EDGES CONCEALED

FIG. 2 MINIMUM PROFILE LENGTH OF THE EDGE

**Table 6 Minimum Flexural Breaking Strength**

(*Clause* 7.4)

| Sl No.<br>(1) | Thickness<br>mm<br>(2) | Minimum Strength<br>N<br>(3) |
|---|---|---|
| i) | 6 | 120 |
| ii) | 8 | 130 |
| iii) | 9.5 | 140 |
| iv) | 12.5 | 180 |
| v) | 15 | 220 |

### 7.8 Humidified Deflection

The gypsum ceiling tiles, when tested for humidified deflection test as per Annex B, the maximum deflection shall be as per Table 7.

## 8 FINISH

### 8.1 Finish of Gypsum Ceiling Tiles

The surface of the gypsum ceilings tiles shall be true and free from imperfections that would render the gypsum ceilings tiles unfit for use.

### 8.2 Surface Finish of Gypsum Ceilings Tiles

Surface coating of gypsum ceilings tiles shall fulfill the requirement as given below.

**8.2.1** *Plain Gypsum Ceiling Tiles*

The surface of plain gypsum ceiling tiles shall have a minimum grammage per square metre is 150 $g/m^2$, when tested as per IS 2542 (Part 2/ Sec 3).

**8.2.2** *Painted Gypsum Ceiling Tiles*

The surface of painted gypsum ceiling tiles shall have acrylic paint coated thickness of 1 mm minimum when tested as per IS 16719.

**8.2.3** *Laminated Gypsum Ceiling Tiles*

The surface of laminated gypsum ceiling tiles shall have a minimum 0.07 mm thickness of lamination.

**8.2.4** *Gypsum Ceiling Tiles with Metalized Polyester Laminate* (*MPL*) *Backing*

The surface of metalized polyester laminate (MPL) backing shall have a minimum thickness of 10 microns of metalized polyester film.

**8.2.5** *Semi Perforated*

Gypsum ceiling tiles can be semi-perforated by using small pin holes. After semi-perforating no sharp edges shall be present and surface shall be smooth.

**8.2.6** *Fully Perforated*

Gypsum ceiling tiles can be perforated in any shape like round, square, hexagonal, etc. After fully perforating no sharp edges shall be present and surface shall be smooth.

## 9 SAMPLING AND CRITERIA FOR CONFORMITY

### 9.1 Scale of Sampling

**9.1.1** *Lot*

In any consignment, all the gypsum ceiling tiles of the same type, size and profile, manufactured from set of same materials, under similar conditions of production shall be grouped together to constitute a lot.

**9.1.2** The gypsum ceiling tiles shall be selected from the lot at random. In order to ensure the randomness of the selection, the procedure given in IS 4905 may be followed. The number of gypsum ceiling tiles to be selected from the lot depends upon the lot size and shall be in accordance with Table 8.

**Table 7 Dimensions of Gypsum Ceiling Tiles with Grids**

(*Clause* 7.8)

| Sl No.<br>(1) | Thickness of Gypsum Ceiling Tiles<br>mm<br>(2) | Humidify Deflection, *Max*<br>mm<br>(3) |
|---|---|---|
| i) | 6 | 20 |
| ii) | 8 | 20 |
| iii) | 9.5 | 15 |
| iv) | 12.5 | 10 |
| v) | 15 | 5 |

**Table 8 Sampling of Gypsum Plaster Board**

(*Clauses* 9.1.2, 9.2.1 *and* 9.2.2)

| Sl No. | Lot Size No. | Sample Size for Dimensional Requirements | Acceptance Number | Sample Size for Other Tests |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| i) | Up to 1 000 | 5 | 0 | 2 |
| ii) | 1 001 to 2 000 | 8 | 0 | 3 |
| iii) | 2 001 to 5 000 | 13 | 1 | 5 |
| iv) | 5 001 and above | 20 | 1 | 8 |

### 9.2 Number of Tests and Criteria for Conformity

**9.2.1** Each gypsum ceiling tile selected in accordance with col (2) and col (3) of Table 8 shall be subjected to the tests for the dimensional, shape and finish requirements. Any tile failing to meet one or more of the requirements shall be considered defective. If the number of gypsum ceiling tiles found defective is less than or equal to the corresponding acceptance number given in col (4), the lot shall be considered as conforming to the requirements.

**9.2.2** The lot which has been found as conforming to the above requirement shall then be subjected to the test applicable as per Table 5. For this purpose, the number of gypsum ceiling tiles to be selected shall be in accordance with col (2) and col (5) of Table 8. The lot shall be considered as conforming to these requirements if no defect is found.

**9.2.3** The lot shall be considered as conforming to the requirements of this standard, if **9.2.1** and **9.2.2** are satisfied.

## 10 REQUIREMENTS FOR ECO MARK

### 10.1 General Requirement

**10.1.1** The product shall conform to the requirements of quality and performance as specified in the standard.

**10.1.2** The manufacturer shall produce to the Bureau of Indian Standards environmental consent clearance from the concerned State Pollution Control Board as per the provisions of the *Water* (*Prevention and Control of Pollution*) *Act*, 1974 and *Air* (*Prevention and Control of Pollution*) *Act*, 1981 along with the authorization, if required under the *Environment* (*Protection*) *Act,* 1986 while applying for ECO-Mark.

**10.1.3** The product or product packaging may display in brief the criteria based on which the product has been labelled environment-friendly.

**10.1.4** The material used for product packing shall be recyclable, reusable or biodegradable.

### 10.2 Specific Requirements

For ECO Marking, gypsum ceiling tiles shall be manufactured using by-product gypsum.

NOTE — The manufacturer shall provide documentary evidence by way of a certificate or declaration to this effect to the Bureau of Indian Standards while applying for ECO-Mark.

## 11 DESIGNATION

Gypsum ceiling tiles shall be designated using the following convention.

"Gypsum Tiles/Type/Dimension/Edges profiles"

For example: Gypsum ceiling tiles of Type 4 having dimensions 300 mm × 300 mm × 8 mm with revealed edge shall be designated as — Gypsum Tiles/Type 4/300 × 300 × 8/RE.

## 12 PACKING AND MARKING

**12.1** The gypsum ceiling tiles shall be transported so as to be kept dry and free from moisture and any kind of damage.

**12.2** The gypsum ceiling tiles shall be packed in such packages which are made from recyclable, reusable or biodegradable materials as declared by the manufacturer and may be accompanied by detailed instructions for proper use.

**12.3** Each gypsum ceiling tile or pack of gypsum ceiling tiles shall be legibly and indelibly marked with the following information:

a) Manufacturer's name or trade-mark, if any;
b) Designation;
c) Batch number and date of manufacture; and
d) The criteria under which the product has been labelled an ECO-Mark, if applicable and the list of identified critical ingredients

in descending orders of quantity, percent by mass.

## 13 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## ANNEX A

(*Clause* 2)

## LIST OF REFERRED STANDARDS

| *IS No.* | *Title* |
|---|---|
| IS 1288 : 1982 | Methods of test for mineral gypsum (*second revision*) |
| IS 2095 | Gypsum plaster boards — Specification: |
| (Part 1) : 2023 | Plain gypsum plaster boards (*fourth revision*) |
| (Part 2) : 2022 | Coated/laminated gypsum plaster boards (*third revision*) |
| (Part 3) : 2022 | Reinforced gypsum plaster boards tiles cornices and mouldings (*third revision*) |
| IS 2469 : 2023 | Gypsum — Glossary of terms (*second revision*) |
| IS 2542 (Part 2/ Sec 3) : 1981 | Gypsum plaster, concrete and products — Methods of test: Gypsum products, Determination of mass and thickness of paper surfacing, (*first revision*) |
| IS 2720 (Part 26) : 1987 | Method of test for soils: Determination of *p*H value (*second revision*) |
| IS 3346 : 1980 | Method for the determination of thermal conductivity of thermal insulation materials (two slab, guarded hot-plate method) (*first revision*) |
| IS 4905 : 2015 | Random sampling and randomization procedures (*first revision*) |
| IS 8225 : 2018/ ISO 354 : 2003 | Acoustics — Measurement of sound absorption in a reverberation room (*second revision*) |
| IS 8272 : 1984 | Specification for gypsum plaster for use in the manufacture of fibrous plaster boards (*first revision*) |
| IS 12679 : 2023 | By-product gypsum for construction — Specification (*second revision*) |
| IS 15489 : 2013 | Paint, plastic emulsion — Specification (*first revision*) |
| IS 16719 : 2022 | Solvent free polyurethane coatings for exterior of steel pipe and fittings — Specification (*first revision*) |

## ANNEX B

(*Clause* 7.8)

## DETERMINATION OF HUMIDIFIED DEFLECTION

### B-1 OBJECTIVE

**B-2** The test method will provide the humidified deflection in the manner of sag. The test method will provide both the initial sag below the plane of the grid system and the total moisture-induced sag. It will provide sag properties at specific temperatures, humidity, exposure time, and prescribed mounting conditions.

### B-3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2469 shall apply.

### B-4 APPARATUS

#### B-4.1 Controlled-Atmosphere Chamber

Controlled atmosphere chamber capable of operating at a temperature of 23 °C to 32 °C ± 1.5 °C and relative humidity of 50, 60, 70, 80 or 90 ± 2 percent.

#### B-4.2 Sample Test Frames

Sample test frames are fabricated from nonferrous metal, such as aluminium, and of suitable linear dimensions as shown in Fig. 3. Frames shall be constructed of size 6 mm × 38 mm × 38 mm. Frames shall be fabricated, so they are level and square. Overall inside dimensions of the frames shall be such that the panels do not touch the vertical edges of the frame if they expand under prolonged exposure to conditions of high humidity.

#### B-4.3 Racks

Racks may be constructed of a convenient design to hold one or more test frames in a horizontal plane; however, a sufficient distance shall be maintained between frames to permit adequate circulation of the test atmosphere and permit test measurements without moving panels.

#### B-4.4 Sag Bar

Sag bar is equipped with a dial indicator having a minimum movement of 25 mm, calibrated in increments of 0.025 mm or less. The bar shall be equipped with individually adjustable feet having 20 mm diameter bearing surfaces. The distance between centres of the bearing surfaces shall be equal to the linear panel dimension of tiles. Fig. 4 shows a typical sag bar design with centering located dial indicator.

#### B-4.5 Zero-Plane Plate

A zero-plane plate fabricated of 6 mm thick by 80 mm wide steel or aluminium stock. The length of the plate shall be 6 mm less than the inside width of the test frame.

### B-5 SPECIMEN

Test specimens shall be full-size tiles.

### B-6 PROCEDURE

#### B-6.1 Conditioning

Sample shall be conditioned to constant mass before testing at a temperature of (27 ± 2) ºC and relative humidity of (65 ± 2) percent.

**B-6.2** Place the sag bar on a flat surface, such as a rigid aluminium bar of a length appropriate to the size of the sag bar.

**B-6.3** Adjust the dial gauge indicator to read the thickness of the test frame angle. This will provide an indication of 0 mm (0 inch) when the indicator foot is in the plane of the test panel supporting surface.

**B-6.4** Mark the geometric centre of the tile or panel on the finished surface at the intersection of diagonals drawn from corner to corner.

**B-6.5** Install the tile or panel in the test rack within the environmental chamber with the finished surface facing down.

**B-6.6** Record the dial gauge reading as the 'initial reading'.

**B-6.7** Place the sag bar under the test panel with the sag bar feet pressed firmly into contact with the horizontal members of the frame and with the bar parallel with the shortest (if not symmetrical) members of the frame. The feet should be positioned at the centre of the span of the longest frame member and the dial gage foot should be located at the panel centre as marked in **B-6.4.**

**B-6.8** Adjust the environmental chamber to provide the desired temperature and relative humidity. These conditions should be obtained over a time period not exceeding 15 min. Hold at these conditions for 17 h (which includes the adjustment time). Record the dial gauge reading as the 'wet reading'.

**B-6.9** Return the sample to the conditions used to obtain the 'initial reading' in **B-6.6**. Again this change should occur over a time period not exceeding 15 min. Maintain the sample at these conditions for 7 h (again this time period includes the adjustment time). Record the dial gauge reading as the 'final reading'.

## B-7 CALCULATION

Calculate the total humidified deflection as below:

Total humidified deflection =
Final reading of sag – initial reading of sag

## B-8 REPORT

Average reading of humidified deflection for three samples shall be reported as the humidified deflection in mm

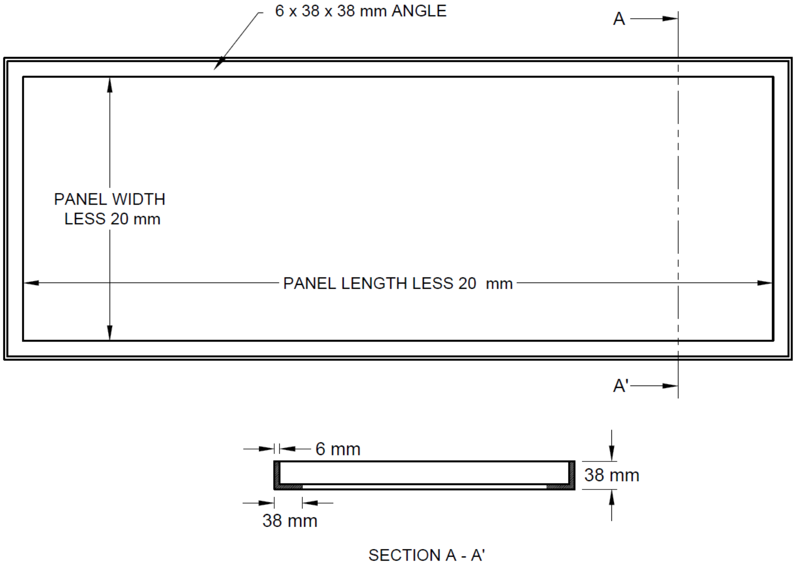


FIG. 3 TYPICAL DETAILS OF SAG TEST FRAME

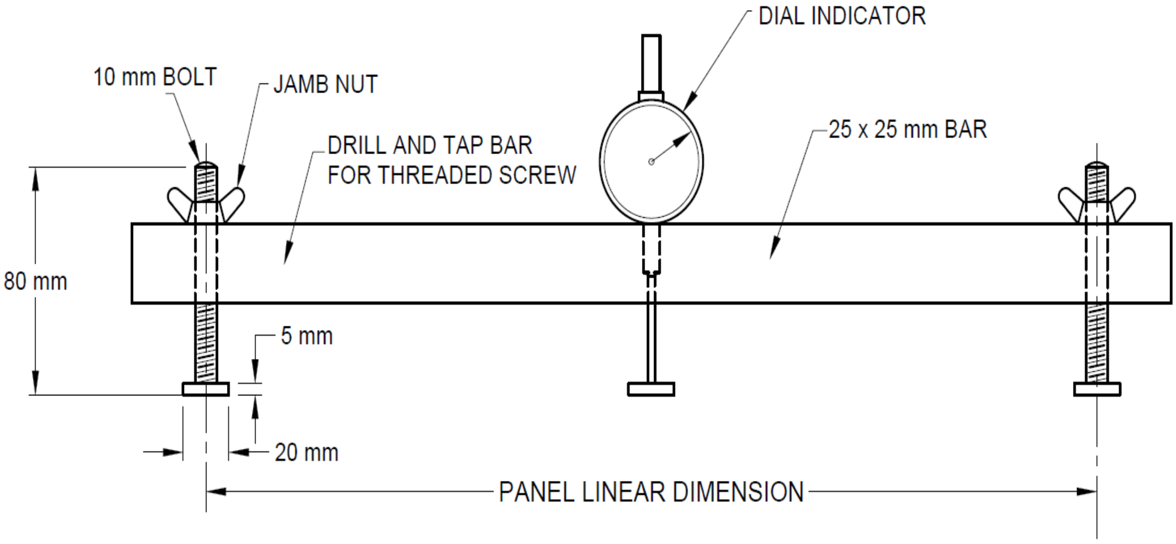


FIG. 4 TYPICAL DETAILS OF SAG BAR

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## ANNEX C

(*Foreword*)

## COMMITTEE COMPOSITION

Building Limes and Gypsum Products Sectional Committee, CED 04

| *Organization* | *Representative(s)* |
|---|---|
| School of Planning and Architecture, New Delhi | Prof Anuradha Chaturvedi **(*Chairperson*)** |
| AIMIL Ltd, New Delhi | Shri Rohitash Barua<br>Shri Madan Kumar Sharma (*Alternate*) |
| Archaeological Survey of India, New Delhi | Representative |
| Automative Research Association of India, Pune | Shri Sachin Jain |
| Building Materials & Technology Promotion Council, New Delhi | Shri C. N. Jha |
| Central Public Works Department, New Delhi | Shri M. K. Mallick<br>Shri Divakar Agarwal (*Alternate*) |
| Central Soil & Materials Research Station, New Delhi | Shri U. S. Vidyarthi<br>Dr Neelam Phougat (*Alternate*) |
| CSIR - Central Building Research Institute, Roorkee | Shri Soumitre Maiti |
| CTS Restoration Products India Private Limited, New Delhi | Shri Roberto Bello |
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